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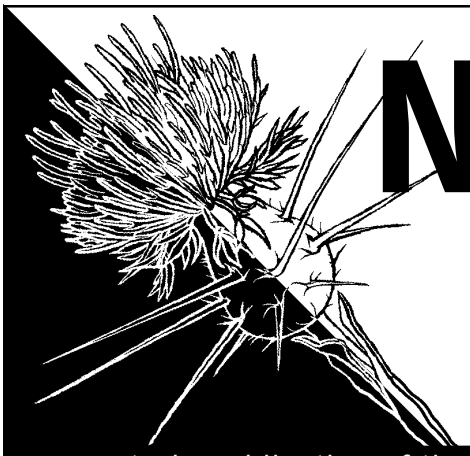

Noxious Times

a quarterly publication of the California Interagency Noxious Weed Coordinating Committee

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UPDATE: Assembly Bills 1168 & 737

There is good news and bad news on the State legislative front for weed management. The good news is that Assembly Bill 1168 Frusetta et al. (AB1168) passed through all committees and the Assembly floor with a unanimous yes vote. The bad news was that all monies associated with the bill were stripped out in the Finance Committee. The main function of the bill had been to create the Noxious Weed Management Area Fund and make an appropriation to this fund for implementation and research. Secondary goals were to create and fund a Statewide Weed Management Area Coordinator and a Statewide Weed Mapping Coordinator in the Department of Food and Agriculture. It is unclear right now how to get money back into this program, however the bill is now on the Senate side and is still open to amendments as it works its way through committees. Contact your State Senator if you have views on the bill. AB737 Oller et al. is alive, but on suspension, in the Assembly Agriculture Committee. It is very similar to AB1168 and could very well be resurrected next year to follow up on the funding issue. ❖

NFWF Awards Announced

The National Fish and Wildlife Foundation (NFWF) is a private, non-profit organization established by Congress in 1984. NFWF works to foster cooperative partnerships to conserve fish, wildlife, and plant resources. NFWF stimulates private funding for conservation through the use of challenge grants. The Pulling Together Initiative (PTI) provides a means for federal agencies to be full partners with state and local agencies, private landowners and other parties interested in developing long-term weed management projects within the scope of an integrated pest management strategy. The initiative provides support on a competitive basis for the formation of local weed management area (WMA) partnerships. These partnerships are financed by funds from federal agencies together with matching funds from state, local, and private partners. Recent award recipients include:

Bear Creek Watershed Restoration *American Land Conservancy* $114,400
Reduce the threat of yellow starthistle, medusahead, barb goatgrass, tamarisk, & other invasive plants in the Bear Creek watershed through prescribed burning, mowing, grazing, manual removal, and herbicide application.

Big Sur Coast Wildlands Project *USDA-Forest Service, Los Padres National Forest* $85,200
Eradicate 53.2 acres of three weed species at 16 locations along the Big Sur coast; restore habitat for twelve plant species and six wildlife species; enhance habitat quality of riparian woodlands, coastal sage scrub, and coastal prairie; and perform public outreach.

Cosumnes River Exotic Weed Management *Bureau of Land Management* $53,800
Implement invasive weed eradication and management program on 7,000 acres of public and private lands within Cosumnes River Preserve. Efforts include prescribed burn, native bunchgrass seeding program, eradication of exotic tree species, and outreach.

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CINWCC Signatory Agencies and Representatives

California Agricultural Commissioners and Sealers Association
Mark Quisenberry, Acting (530) 822-7500
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Nate Dechoretz (916) 654-0768
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Dave Dyer (209) 727-5319
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California Cattleman's Association
Ken Zimmerman (562) 866-1400
California Exotic Pest Plant Council
Jake Sigg (415) 731-3028
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The Nature Conservancy
John Randall (530) 754-8890
U.S. Department of Agriculture, Agricultural Research Service
Ray Carruthers (510) 559-5800
Joe Balciunas (510) 559-5975
University of California
Joe DiTomaso (530) 754-8715

Chairman's Message:
Nate Dechoretz

This will be the fifth issue of the Noxious Times and my last message as Chair of the California Interagency of the Noxious Weed Coordinating Committee (CINWCC). I have asked Cheri Rohrer from the USFS to be my replacement as Chair and she has graciously accepted. I have truly enjoyed my tenure as chair of CINWCC and feel that we have all accomplished quite a lot over the past two years. Examples of our achievements include: (1) developing a realistic strategic plan for CINWCC with important and achievable goals, (2) assisting and encouraging the formation of local weed management areas, (3) increasing communication and coordination among agencies and groups concerned with noxious weeds, and last, but certainly not least, (4) fostering the spirit of cooperation and partnership among the environmental community, regulatory community, and land resources community/agencies responsible for managing land and right-of-ways, and private landowners/leasees who are impacted by noxious and invasive weeds. CINWCC should continue to work towards fostering new partnerships and alliances. The next couple of years will be exciting and challenging. Although we should be proud of our efforts in addressing noxious weed problems, there is considerable room for improvement.

President Clinton's Executive Order on invasive species was a significant message at the Federal level. California (Federal, State, local, and private) entities can proudly say "we are already undertaking many of the outlined goals." Hopefully CINWCC can be part of a larger effort in assuring that more resources become available to improve on-the-ground level efforts directed at prevention and control of noxious and invasive weeds.

As many of us know, education and public awareness are critical components of an effective and comprehensive weed program. We should increase our efforts in this area. Better information will help prevent unnecessary spread of weeds by human activity. In addition, public awareness concerning the impacts of noxious and invasive weeds will assist decision makers in allocation of resources and participation.

Finally, I would like to thank everyone who has attended the CINWCC meetings as a representative of a signatory agency or as a representative of a stakeholder. Special thanks to Anne Knox (USBLM) and Cheri Rohrer (USFS) for their guidance, advice, and support of CINWCC. At the State level, we hope that support from the Resource Agency continues and expands. Special thanks to Larry Shields (CalTrans) not only for his agency's support of CINWCC, but also for his local office's participation in WMA's throughout the State. Lastly, a special thanks to Ken Zimmerman (California Cattlemen's Association) and Jake Sigg (California Native Plant Society) for their guidance, counsel, and making my job exciting and challenging.

Noxious Times is a publication of the California Interagency Noxious Weed Coordinating Committee. The committee was formed in 1995 when 14 federal, state, and county agencies came together under a Memorandum of Understanding to coordinate the management of noxious weeds. The committee's mission is to facilitate, promote, and coordinate the establishment of an Integrated Pest Management partnership between public and private land managers toward the eradication and control of noxious weeds on federal and state lands and on private lands adjacent to public lands.

The *Noxious Times* newsletter intends to help the committee achieve its goals of coordination and exchange of information by providing land managers throughout the state with information on weed control efforts, news, and successes.

Noxious Times is published quarterly by staff of the Integrated Pest Control Branch at the California Department of Food and Agriculture. We welcome submissions for our upcoming issues. Please send to: CA Department of Food and Agriculture, ATTN: Noxious Times, 1220 N Street, Room A-357, Sacramento, CA 95814 or e-mail: noxtimes@cdfa.ca.gov

If you have a colleague whose name you would like to add to our mailing list, please send mailing information to the address above.

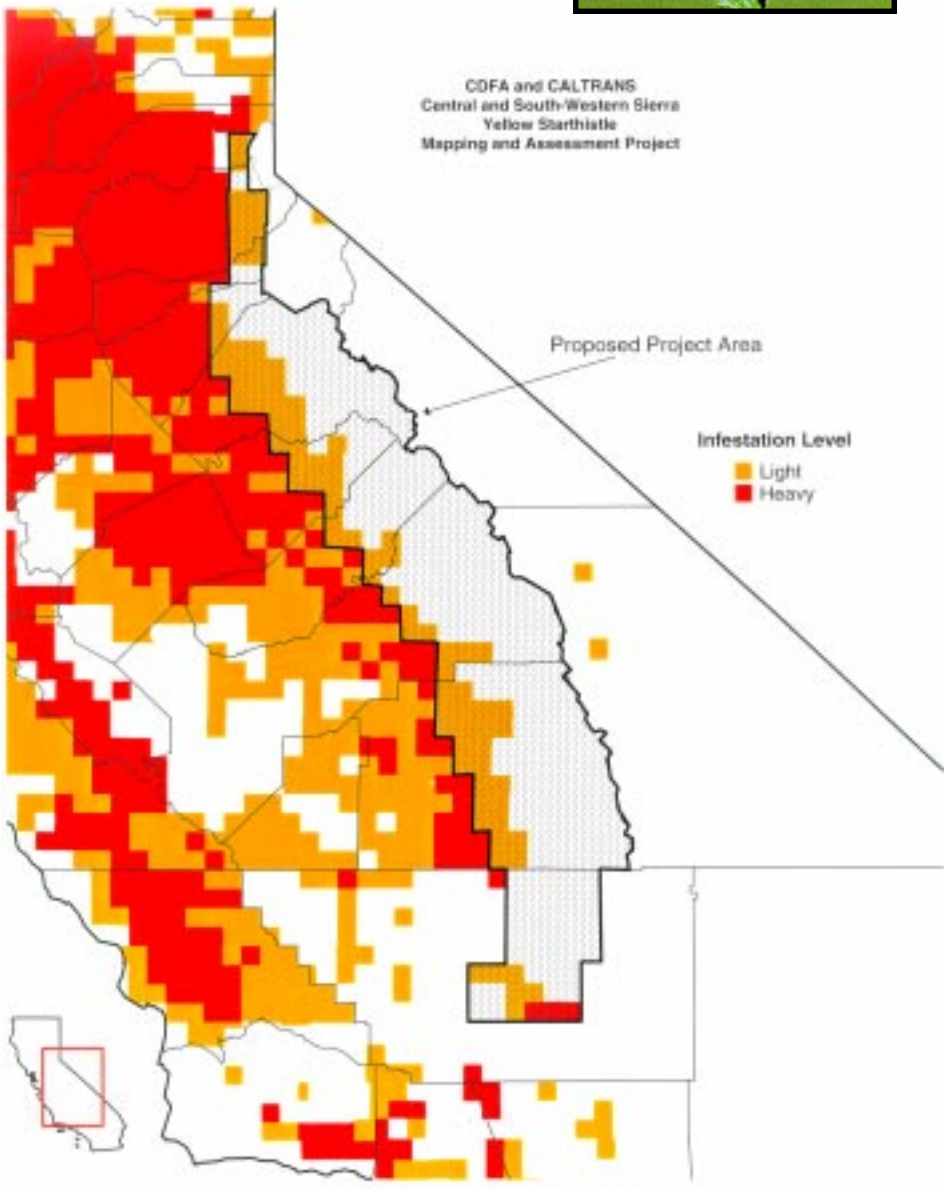
CDFA and CALTRANS Team Up To Find Eastern Leading Edge of Yellow Starthistle in the Sierras

The California Department of Food & Agriculture (CDFA) and CALTRANS will team together to fund and lead a project to coordinate a multi-agency mapping of yellow starthistle (YST) at mid-elevations in the central and south-western Sierra. The project will also map YST on State highway right-of-ways in the central-western Sierra. One of the main products of this activity will be a report that will identify areas of high and low priority for stopping the spread of YST.

Yellow starthistle is estimated by the CDFA to cover over 12 million acres in California and is completely beyond total statewide eradication. Such a project would cost billions of dollars and engage tens of thousands of people for many years. Currently, the major activity devoted towards YST is focused on reducing infestation levels in areas where YST is very abundant. However, YST is still moving into non-infested watersheds. There are large areas, including private land and public forests and parks, that can still be protected from the presence of YST in whole watersheds and valleys. In areas like the mid-elevation western Sierra slope, control efforts should focus on prevention of further spread and on local eradication. Agencies and private landowners need better information on where to prioritize this type of control and eradication so that they are making the most effective use of their budgets.

CDFA and CALTRANS, with support from the County Agricultural Commissioners, members of the California Interagency Noxious Weed Coordinating Committee, and local Weed Management Areas, propose mapping of YST by a few hundred resource management professionals, qualified amateurs, and landowners. Mapping will be carried out at a fairly high level of resolution and put into a Geographic Information System. Primary areas of focus will include public lands and roadway easements. A secondary focus will be on the mapping of YST on private land.

For more information on this project contact Steve Schoenig of the CDFA at (916)-654-0768, sschoenig@cdfa.ca.gov or www.cdfa.gov/map_yst



WEED CONTROL 101: Integrated Weed Manage

BY: STEVE SCHOENIG and CRAIG THOMSEN

The first time that many land managers and land owners seriously think about weed control is when they are faced with a dominant and widespread weed that has become totally out of control on their lands. Their first thought is that a simple, quick solution will wipe out the weed and return them to a weed-free condition. Unfortunately for most, weed control is an ongoing land management activity. Progress is possible only through a slow, steady, comprehensive attack strategy that incorporates many facets of project management and implementation. Many different weeds and land stewardship objectives can be addressed in an overall approach. This article will deal with a broad overview of weed control projects in general and issues involved in coordinated efforts over large landscapes. In following issues of the *Noxious Times* each phase of the weed control process will be covered separately and in more detail.

The physical act of killing weeds, although satisfying, is but one part of a comprehensive weed management strategy. Elements of planning and preparation should precede the actual control work and follow-up monitoring, evaluation, and possibly restoration will come after. Prevention should be the constant element at every level. Two different models to a comprehensive weed control strategy will be summarized here.

Wildfire Management Model

"Modern wildfire management is based on elements of Prevention, Detection, Suppression (Control), and Revegetation. Essentially every element of wildfire management has close parallels to weed management, making an excellent example or pattern from which to develop more effective weed control strategies and programs. Thinking of a weed as a slow moving wildfire can provide a valuable perspective when developing and implementing weed management plans."[1]

(1) ***Prevention***- Prevention is the first line of defense against wildfires, and the same should be true for noxious weeds. Weed prevention means placing a priority on preserving and protecting lands not presently infested. Education and regulation are key ingredients needed to raise public awareness and gain greater support for weed prevention. A significant portion of every weed management budget should be devoted to awareness education and to other forms of prevention.

(2) ***Detection***- Early detection of wildfires makes rapid and complete control much more likely. The same is true for weeds. Weed detection requires field surveys and accurate mapping by designated weed management personnel. Additionally, ways to involve volunteer groups, recreationists, and other interested public land users in noxious weed detection and reporting should be explored.

(3) ***Suppression*** *(Control)*- Wildfire control activity is called suppression. Fire fighters follow a proven step-wise process, carried out in the following sequence: rapid response, size-up, containment, and mop-up. Adoption of a similar four-step approach to noxious weed control could increase the effectiveness and efficiency of almost any weed program. *Rapid response*-weed infestation is still limited in distribution, *size-up*-development of a weed control plan, *containment*-stop the advancing perimeter before controlling the interior of an extensive infestation, and *mop-up*-total eradication, including exhausting the seed bank.

(4) ***Revegetation*** *(Site Restoration)*- Revegetation in wildfire management often occurs naturally, but at times needs to be assisted. Weed managers should place emphasis on revegetation following control because a healthy stand of desirable plants protects sites from reinvasion by noxious weeds.

A resource/budget allocation within effective fire management programs includes 15% prevention, 23% detection, 59% suppression (control), and 3% site rehabilitation- a similar balance should exist in weed management programs. A balance of all four elements is essential for effective management of wildfires or weeds, while variability in budgeting is to be expected.

[1] Steven A. Dewey. "A Biological Wildfire- Applying Fundamentals of Wildfire Management to Improve Noxious Weed Control." A pamphlet developed by Dewey and Utah State University Extension. Dewey is an Extension Weed Specialist at Utah State University in Logan, UT.

[2] These ideas are based, in part, on strategies originally developed and discussed by John Randall and Oren Pollack of the Nature Conservancy, http://tncweeds.ucdavis.edu/products.html

ment Models and Region-Wide Control Programs

Adaptive Management Model

The Adaptive Management Model[2] is a cycle of activities which begins by specifying overall management goals for a piece of land and then repeats the process over again after the last step of the cycle - which is to monitor the site and then review goals and priorities. The steps in the cycle are:

(1) Specify or Revise Management Goals – Weed control is often necessary to help achieve these specific land management, production, environmental quality, and quality of life goals. These goals might include enhancing native biodiversity, improving forage quality, and wildlife habitat, or maintaining the beauty of the landscape.

(2) Map Infestations – Knowing where weeds are – including single plants and small patches – is an essential step in developing an effective program. Although this might seem obvious, remember the majority of large dense stands began as a single plant or widely scattered "pioneer" plants. These are often overlooked until they have increased to the point that they can no longer be ignored, but are increasingly difficult to control. Plants can be mapped on paper maps (7.5'quads, county maps, custom, etc.) or one can utilize a Geographical Information Systems (GIS) and Global Position System(GPS). These technologies allow the production of digital or computer maps which can be easily revised and analyzed. GIS and GPS have come down in price and complexity and are an invaluable tool for land and resource management.

(3) Prioritize Species, Control Areas, and Determine Level of Control – Successful weed control requires strategic, economic, and ecological thinking. Decisions must be made on where, when, and how much effort should be put into control activities. Since time and money are in short supply, weed control efforts must be allocated efficiently. By differentiating between levels of control, i.e. eradication, containment, and management, one's weed control thinking will be sharpened, enabling planning, prioritization, and efficient progress. **Eradication** requires eliminating the weed totally from your site. All seed production must be halted and existing seed depleted. This can take one year to decades years depending on the weed. **Containment** is attempted by delineating boundaries around large infestations, concentrating eradication on small peripheral patches outside of the boundary, and possibly undertaking management activities within. **Management** focuses on reducing plant densities, biomass, seed production, plant height, and canopy size of large well-established infestations. A management-approach accepts that eradication - for whatever reason - is not achievable, but that large infestations can be managed in ways that reduce the infestation to tolerable levels; allowing people, domestic animals, and native biota to use areas that might otherwise have little value. (see the Handbook for Ranking Exotic Plants for Management and Control R. Hiebert & J. Stubbendieck: www.nature.nps.gov/pubs/ranking/)

(4) Choose Your Tools – "Use the right tools for the job" – an old axiom that applies well to weed control. There is usually no one tool for getting the job done and all methods have risks and benefits.. The choice of tools (herbicides, biocontrol, mowing, grazing, prescribed fire, cultivation, manual control, competitive planting) must be made on a site-by-site basis. The choice will depend on many factors including goals, terrain, desired level of control, climate and your land management skills. In general, an integrated approach that uses combinations of control methods tailored to your unique set of conditions will be the most effective solution. Over-reliance on, or the incorrect application of, any one tool is likely to lead to problems.

5) Implement Control and Restoration – Like humor, good timing is essential for good weed control. Poorly timed control activities are a waste of money and time. In many cases they make problems worse. Develop and use a weed control calendar, based on the target plant's life cycle and choice of tool. Consult knowledgeable individuals and experts about their experiences. The following websites are sources of information about weed control and weed experts:

CalWeed Database: **endeavor.des.ucdavis.edu/weeds/default.htm**
Weed Research and Information Center: **wric.ucdavis.edu**
California Exotic Pest Plant Council: **www.caleppc.org**
California Native Plant Society: **www.calpoly.edu/~dchippin/exotic.html#othe**

Restoration or revegetation may be necessary following the reduction of undesirable species. This will be necessary where there are no longer desirable species in the local vegetation mix to spread out and recolonize. Depending on the management focus for the land, these desirable plants can be either local natives or horticultural varieties. Some internet resources for restoration are:

California Ecological Restoration Projects Inventory: **endeavor.des.ucdavis.edu/cerpi/**
SERCAL the California Society of Ecological Restoration: **www.sercal.org/**

6) Monitor Treatment Success and Impacts – Monitoring is an important step in evaluating treatments for immediate effects and to determine if there are long lasting reductions in weed densities the following season. Most treatments will not be 100% effective. Spot control using the same, or a complementary method will usually be necessary both in the short and long term.

Long term success will be judged by the permanent reduction in numbers or biomass of weeds and whether your efforts are moving towards larger landscape goals. Again, even though a treatment is applied to a patch of weeds it may not kill plants thoroughly or quickly enough to prevent reproduction and lower the population the following year. This may be acceptable in some management schemes, but in general, carry-over reductions will yield more economic benefits. When exotic invasive plants are being managed to promote restoration or enhanced biodiversity, then monitoring of these elements is necessary to evaluate success.

Depending on the situation, there may be endangered species, sensitive habitats, or other native species issues. Sometimes treatment for the removal of one weed can create an opening for other weeds to spread.

Region-Wide Level and Multi-Partner Weed Control Projects

There are many aspects of managing weeds over large landscapes. Since weeds don't respect property or ownership boundaries it often doesn't do much good to control weeds on one property when the adjoining properties are not being managed for weeds. Regional weed control often requires the coordination of private and public land managers and almost always includes an education program to bring all parties up to speed on the problem and proposed solutions.

Groups – There are many different models for cooperative resource management in California. Resource Conservation Districts (RCDs), Coordinated Resource Management and Planning Groups (CRMPs-"crimps"), and watershed associations are a few of the many groups attempting coordinated management. Over the past few years cooperative Weed Management Areas have been established to approach weed control coordination on a county level or on a more local level (see following project descriptions).

Education – Even with the recent increases in awareness and concern about invasive exotic species, there is still a widespread lack of knowledge among the public and many resource managers at the grassroots level about weeds and their control. Before attempting region-wide weed control programs, a well implemented outreach and education campaign is key. Some resources for this campaign can be derived from statewide weed control groups (California Exotic Pest Plant Council, California Interagency Noxious Weed Coordinating Committee, University of California Cooperative Extension, Resource Conservation Districts). Other components are cultivating local newspaper and journalist contacts, making use of existing public events and fairs, pamphlets, videos, fact sheets, and in general, using creative ideas suited to a target community.

Prioritization – Just like the triage that takes place in trying to prioritize medical help to emergency room patients, weed control groups must make "*weed triage"* decisions about which weeds to attack and how best to attack them. A region-wide Adaptive Management Plan (see page 5) should be drafted to detail the management goals and priority species. Different pieces of land and owners may dictate different target species and controls. The group must be both inclusive, and at the same time, try not to take on more than it can realistically accomplish. Initial mapping and survey work should precede the management plan and mapping should continue on an annual basis. (see the Handbook for Ranking Exotic Plants for Management and Control R. Hiebert & J. Stubbendieck: www.nature.nps.gov/pubs/ranking/)

Prevention – When weed management is being attempted at a large scale, the benefits from preventing new or re-infestation become amplified. The California Dept. of Food and Agriculture, along with the County Agricultural Commissioners and other partners, maintain a statewide "pest prevention system" (see *Noxious Times* Vol 1, No 2 p. 6) and soon will implement a California weed free forage program. (see *Noxious Times* Vol 1, No 2 p. 1). Region-wide groups should develop their own local pest prevention system.

Regulation and Legislation – In dealing with weed control we are in part dealing with humans and therefore human nature. Sometimes people will not participate in voluntary and cooperative efforts, despite the work of all of their neighbors. There are regulations, at the discretion of the County government, which can mandate the abatement of State-listed Noxious Weeds. Fire danger can also trigger mandatory weed abatement. The City of Richmond passed a law requiring the abatement of many non-listed weeds(see *Noxious Times* Vol 1, No 3 p. 3) and this could be replicated at the city or county level elsewhere in the state.

Examples of Region-Wide Cooperative Weed Control

Bear Creek Watershed Restoration Program

Craig Thomsen and Nicole Dooskin

The Bear Creek watershed is an ecologically significant landscape that comprises 65,000 acres in the Inner Coast Range in western Colusa County. A wealth of native plant communities are found within the watershed and the diversity of habitats supports 22 special plants and animals, 14 of which are species of concern. Bear Valley occupies the northern portion of the watershed and supports some of the finest lowland wildflower fields in northern California. Productive grazing land provides an important forage base for several livestock operations.

Cooperative partnerships are being formed to implement a long-term weed management program for five invasive plants: yellow starthistle, tamarisk, barb goatgrass, medusahead, and perennial pepperweed. The purpose of the program is to maintain biological diversity and restore desirable plant communities throughout the watershed. Education, aimed at raising awareness about invasive weed problems and demonstrating appropriate weed control methods, will be a major component. The project was initiated by the American Land Conservancy and UC Cooperative Extension Watershed Management program, but the partnership has expanded to include: BLM (Ukiah Field Office), local ranchers, Colusa County (Board of Supervisors, Dept. of Agriculture, Road Dept., and Cooperative Extension,), Wilbur Hot Springs, Fout Springs Boys Facility, Blue Ridge-Berryessa Natural Area Conservation Partnership, DowElanco, Monsanto, Cal Trans, and the California Dept. of Forestry and Fire Protection.

Applying the *adaptive management model* (see page 5), our program includes a combination of detection, eradication, containment and management measures, using an integrated approach of controlled livestock grazing, mowing, cutting, manual and biological control, prescribed burning, and herbicide applications. Control methods will be tailored according to site-specific factors such as goals of the landowners, terrain, weed biology, size of infestation, and native flora and fauna. To aid in our planning, prioritizing, and monitoring, we will make use of GIS and GPS technologies. Weed locations, natural communities, rare plant populations, livestock forage areas, and soil surveys are some of the layers that will be incorporated into GIS maps of the watershed.

The National Fish and Wildlife Foundation, through the *Pulling Together Initiative,* recently awarded the American Land Conservancy a challenge grant for $40,000 to assist with the program. Support funds will be used to support a project director, formalize a weed management group for the watershed, purchase equipment, implement weed control measures, develop an outreach program, and set the stage for other watershed restoration activities.

The long-term success of the program will require ongoing cooperation, continued funding, and a lasting commitment to land stewardship for the entire watershed.

Watershed Scale Cooperative Weed Management Areas

Joanna Clines

One of the primary goals of the South/Central Sierra Noxious Weed Alliance is to promote the formation of many local, watershed scale, cooperative Weed Management Areas (WMAs) that facilitate collaboration among land managers and landowners in managing common weed problems. The Weed Alliance is a multi-county WMA spanning Fresno, Madera, and Mariposa counties, and provides an overarching framework of cooperation among 20 groups and agencies. The two local WMAs (described below) are in the process of forming. Such watershed scale efforts are a key component in the effective education and successful on-the-ground prevention and control of invasive species.

Merced River Canyon WMA Yellow starthistle is spreading rapidly in this magnificent canyon, from the Yosemite Park border, downstream about 20 miles to BLM land heavily used by campers and whitewater rafters. Both the river and State Highway 140 provide ample opportunities for unchecked starthistle expansion, as demonstrated by the floods of 1997. Presently there are still many miles of the canyon virtually uninhabited by starthistle. A group including the Forest Service, BLM, Park Service, USGS, UC Cooperative Extension, Caltrans, CDFA, NRCS, the local RCD, and local landowners have met twice to begin organizing a watershed-based WMA to keep uninfested areas weed-free and to promote containment of yellow starthistle. Two public meetings were held in June in an effort to recruit additional landowners and local community members. The Merced River Canyon WMA expects to enter into a formal cooperative agreement to enable the expenditure of federal dollars on private land, when federal lands would benefit.

Beal Vegetation Management Project Expands to Form WMA Following the reconstruction of the Beal fuel-break in 1995, yellow starthistle expanded into recently cleared areas and presently occupies nearly 20 acres of private and Forest Service lands. This area bisects state Hwy 168 and represents the easternmost expansion of starthistle. Recognizing that this highway was a potential point-source for further spread into highly sensitive (state-listed shrub, *Carpenteria californica*) acreage at higher elevations, the situation was addressed at several Weed Alliance meetings. The threatening expansion of yellow starthistle forced Beal Vegetation Management Project (VMP) cooperators back to the drawing board and as a result the Beal Vegetation Management Project (VMP) WMA was born. The initial group, made up of representatives from the Forest Service, CDF, CDFA, Cooperative Extension, Southern California Edison Company, and Caltrans held its first public meeting in early June. To prevent an escalation of the problem, Beal VMP plans include: treatment of yellow starthistle on national forest land by the FS and treatment of adjacent lands by CDF and Caltrans. The goal is to have a strong landowner/agency partnership formally recognized as a WMA by the year 2000.

Regional Yellow Starthistle Control in Tehachapi

Chuck McCollough, a retired oil company geologist, first became active in Weed control while trying to eradicate, control, and restore weed infested areas in his Tehachapi residential community. Volunteers were enlisted to hand remove, mow, and chemically control tumble weed (Russian thistle), an invasive plaguing their neighborhood. It was during this time, that a spiny, yellow-flowered plant caught the group's attention, which was identified as none other than yellow starthistle.

Soon there after, The Kern County Ag Commissioner and The Kern County Board of Supervisors organized a public workshop to raise community awareness about yellow starthistle. The workshop addressed a variety of biological and ecological information, as well as, on-the-ground control demonstrations. Out of these workshops, the "Tehachapi Yellow Starthistle Task Force," comprised of local representatives and volunteers, was formed. Initial group goals included: mapping infested areas throughout the Tehachapi region, exploration of available integrated control options, and solicitation of community support through an educational outreach campaign.

From 1996 to 1998, volunteers in the four mountain valleys of the Tehachapi area (at elevations of about 4,000 feet) mapped yellow starthistle, as well as, implemented mechanical and chemical control campaigns in selected areas. Several early attempts at organizing a Region-Wide Yellow Starthistle Herbicide Control Program failed due to several temporary roadblocks, namely licensing and liability involved in a volunteer herbicide application program. Liability issues were resolved in late 1998 when Tehachapi Resource Conservation District (TRCD) and Abate-A-Weed Inc. of Bakersfield formed a cooperative alliance. The TRCD agreed to provide weed control equipment and handle clients and funds, while Abate-A-Weed Inc. agreed to provide assistance at a modest charge that covers licensing, liability insurance, and training for herbicide applicators. Transline, an herbicide registered for use in rangeland areas within California in the fall of 1997, was chosen as one tool in regional yellow starthistle management.

The TRCD put together a participation agreement and pay schedule for those private landowners and public agencies interested in having yellow starthistle treated on their property. A schedule of costs (aimed at breaking even) has been worked out for various size infestations based on the ease of access and type of terrain. Those who cannot afford to have their property sprayed may request a participation form and specify the amount of financial assistance needed to complete the job. Participation has been phenomenal, with 232 jobs signed-up to date, jobs that range from ¼ acre to 50+ acres in size.

Ted Davis, Kern County Ag Commissioner, is currently taking the lead in forming the Eastern Kern County Weed Management Area which will involve both (1) those already instrumental in forging a yellow starthistle campaign: TRCD, Kern County District Supervisor, the City of Tehachapi, Community Service Districts, Property owner's associations, CalTrans, and (2) new interested groups throughout the region. The TRCD has recently been awarded a $14,000 California Department of Conservation grant to help further fund the project. TRCD also hopes to work with CalTrans and the California Department of Food and Agriculture on a leading edge yellow starthistle mapping project (see article on page 3) to further define yellow starthistle boundaries within the Region.

It is clear that a multi-year, integrated pest control campaign will be required to enlist participation by all owners with infested lands, in hopes of depleting the seed bank and preventing further spread in the Tehachapi area. Meanwhile, what began as one residential community's battle to preserve their quality of life and property values and escalated into an all-out regional weed control campaign, serves as an excellent model for other communities throughout the state

Craig Thomsen, Range Ecologist, UC Cooperative Extension Watershed Management Program, Davis, CA was a major contributor towards this article. The following individuals contributed towards region-wide examples: Nicole Dooskin, American Land Conservancy, S.F., CA; Joanna Clines, Forest Botanist, Sierra National Forest; Chuck McCollough, and Ted Davis, Kern County Agriculture Commissioner.

UPDATE: Local and Regional Coop

Siskiyou Weed Management Area
Siskiyou County, Pat Griffin (530) 841-4025
Group is working towards a more comprehensive and inclusive way to coordinate control of spotted knapweed. The groups is also working towards applying for grant monies to fund educational weed I.D./control pamphlets and other outreach materials. MOU is in final signatory stage.

Humboldt Weed Management Area
Humboldt County, Lisa Hoover (707) 441-3612
In process of drafting and revising their MOU, while still bringing in additional signatory groups/agencies. Time permitting, the group hoped to submit a "War on Weeds" mini-grant.

Trinity Weed Management Area
Trinity County, Jay Thesken (530) 623-1356, Formation intended.

Marin Weed Management Area
Marin County, Stacy Carlson (415) 499-6700 First meeting held in May at Pt. Reyes- it was well attended. Participants were surveyed on their top three worst weeds. Five subcommittees were formed. The group meets monthly.

Alameda/Contra Costa Weed Management Area
Alameda & Contra Costa Counties, Vince Guise (925) 646-5250
Purple and yellow starthistles and artichoke thistle were targeted as weeds of concern for initial focus/control from a list of 26 potential weeds. The group is first working towards the development of a template- biological profile and available control methods- for yellow starthistle. Mission statement, WMA boundaries, and MOU are in working/draft form.

South Bay Restoration Group- *S.F. Peninsula, Karen Cotter (650) 321-1994* Meets annually to network, discuss restoration efforts, and volunteer recruitment and management throughout the S.F. Peninsula -South Bay. For more information, contact Karen Cotter at kcotter@sprynet.com or log on to www.members.aol.com/gstigall to view our notes from last year's conference.

South Bay Weed Management Area- *South Bay, Eric Wylde, Eric_Wylde@mail.era.CO.Santa-Clara.CA.US* The formation of a South Bay WMA, bounded by Santa Clara County lines, with the possible inclusion of portions of San Mateo and San Benito Counties, is pending- an organizational meeting is expected by this fall.

Big Sur Weed Management Area
Monterey County-Big Sur Coast, Jeff Kwasney (831) 385-5434,
Received a NFWF-Pulling Together Initiative grant entitled "Big Sur Wildlands Recovery Project." This award will be used to control weeds and restore the Hwy 1 Big Sur corridor- a highly infested area and large vector for weed introduction and spread. Invasive thistles on the coastal prairies are actively being eradicated/managed via mowing. The group has also been working in cooperation with summer fire crews towards French broom control. 50+ weed abatement reports have been received from citizen volunteers- reports include weed species, site location(s), and hours worked in control efforts- volunteer labor hours are then available as matching funds for grant opportunities.

Fort Ord Weed Management Area
Monterey County-Fort Ord Area, Jack Massera (831) 663-5537, jmassera@worldnet.att.net
State Parks has transformed 3 miles of iceplant covered dunes to that of native plants. BLM "weed team" controls 15 different invasive weeds on 7,200 acres of BLM land and 500 acres of Army land. Cal State University Monterey Bay (CSUMB), under a BLM-NFWF cost share grant has been responsible for planting over 33,000 native plants/year at formerly eroded military roads and training sites, development of a weed brochure, and the preparation of a slide show featuring 6 of the area's most invasive weeds. Cal Trans has cleared several miles of broom along Hwy 1 and work continues. Monterey County Parks, the City of Monterey, the Navy, and other signatory agencies have also continued towards these weed removal projects. A 1999 NFWF grant will fund several weed warriors from CSUMB, working with the WMA on research and education, while additional interns will work on a community based weed education and outreach program. The 3rd annual "War on Weeds" symposium will be held at Fort Ord or CSUMB in November, 1999, for details contact Laura Lee Lenk, (831) 582-3689 or Bruce Delegado, (831) 394-8314.

Shasta Weed Management Area
Shasta County, Mary Pfeiffer (530) 224-4949,
Formation intended.

Plumas/Sierra Noxious WEEDS Management Group
Plumas and Sierra Counties, Suzanne Ebright (530) 283-6365
The group has produced a brochure entitled: "Control of Yellow Starthi Plumas and Sierra Counties." The brochure is at a final editing stage and available for distribution soon- via Cattlemen's Association, UCCE mai WMA partner agency offices. The group has two educational displays local fair: (1) A large, 3-D window with a giant color poster explaining control methods, even incorporating eradication tools, (2) An educatio with color picture posters, live noxious weed specimens, maps, samples and an interactive weed I.D. board. The Center will be staffed by WMA Local libraries now boast noxious weed reference sections- WMA partn materials such as I.D. guides, management references, videos, etc. Cal District 2 has been placing "Wanted Dead, Not Alive!" noxious weed p produced by BLM, USFS, and the American Hiking Association in info areas of rest stops. The group has also been active in both the Weed F Committee and Sierra-Nevada Framework EIS.

El Dorado Noxious Weed Management Area
El Dorado County, Bill Frost (530) 621-5502, wefros
Held an educational workshop on yellow starthistle m finalizing/signing MOU- 20 signatory agencies involve a noxious weed I.D. and management brochure. Yello utilizing chemical, grazing, and fire controls have beer

Northern Sacramento Valley Wee
Colusa, Glenn, & Tehama Counties, C 3316, cmolitoris/r5_mendocino@fs.fe
(MOU) stages. The group is drafting a memorandum which will highlight par subgroups.

Eastern Sierra Weed Management Area
Inyo & Mono Counties, George Milovitch (
Saltcedar control efforts this summer in introductions- beetles (*Diorhabda elo* will also reintroduce biocontrol ag puncture vine. Perennial pep actively under eradication. has been on display at l plated Weed I.D. book

Kern Weed Ma
Kern County, Da
WMA bounda to county the gr ex

San Luis Obispo Weed Management Area
San Luis County, Richard Greek (805) 781-5910 and Brian Stark (805) 544-9096,
Formation intended.

perative Weed Management Areas

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d Management Area
Carol Molitoris (916) 934-
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broad and simple
ticipation on projects via

a
760) 873-7860, jmassera@worldnet.att.net
clude: transects, continued detection work, and experimenting biocontrol
ngata, see Noxious Times Vol. 1, No. 4, pg 4) in the Owens Valley. The group
gents- weevils (*Microlarinus spp*., see Noxious Times Vol. 1, No. 4, pg 12)- on
perweed (*Lepidium latifolium*), Canada thistle, and Scotch thistle have been
A large (8' X 12') display board with large photos of noxious weeds and a video
ocal fairs and events. Through grant funding the group is also working on a color
k- over 20 local weeds will be featured.

anagement Area
avid Moore (661) 868-6300, agcom15@netxn.com
aries were recently defined- northern, southern, & eastern boundaries equivalent
lines and the western WMA is the eastern portion of the valley floor. Currently
oup is actively recruiting stakeholders, identifying weeds of importance, and
xploring granting opportunities. All stakeholders are continuing to define their roles
in the WMA and plan to develop a Memorandum of Understanding in the near future.

Modoc Weed Management Area
Modoc County, Allison Sanger (530) 233-5811
MOU is expected to be finalized- 35 signatory agencies/stakeholders- by midsummer. The group is also busy writing grants: "War on Weeds" Mini-Grant submitted aimed at purchasing a GPS unit and a "Pulling Together Initiative" Grant hoping to secure funds for additional inventory efforts- manpower and equipment.

Nevada Weed Management Area
Nevada County, Eric Gunderson (530) 273-2648, In very initial stages of organization and formation. A planning meeting is slated for the fall.

Central Sierra Partnership Against Weeds
Calaveras & Tuolumne Counties, Marian Chambers (209) 533-5691,
A brochure listing 12 noxious weed species was completed and has been widely distributed- increasing local awareness, land stewardship, and discussion. Weed control efforts continue at their Adopt-A-Highway Demonstration Weed Control Site (see article on page 4). A pilot project in controlling yellow starthistle with Transline is underway. Calaveras County also has an established (4 years running) yellow starthistle spray control program for land owners- treatment from edge of road to property fence at cost, maximum of $85/mile- 20 miles of roadside have been treated to date. Contact Calaveras County Ag Commissioner, Jearl D. Howard at (209) 754-6504 for further information about this yellow starthistle spray program.

Tulare Weed Management Area
Tulare County, Joe Williams (559) 732-9163 x134, JoeWilliams@ca.nrcs.usda.gov
Held a weed tour in June focusing on thistles, namely yellow starthistle. Presenters provided updates on biological, chemical, and cultural control methods, rangeland impacts, weedfree forage/hay program, and organized visits to demonstration plots. Submitted an EQIP grant that will potentially fund a weed I.D./control brochure, preliminary mapping efforts, and an additional weed tour. This newly formed group is still activity soliciting further participation.

Lassen County Noxious Weed SWAT Team
Lassen County, Carolyn Gibbs (530) 257-0456, cgibbs@blm.ca.gov
A Noxious Weed Week was held June 14-19, activities included: donation of invasive weed reference materials to the local public library, a "whistle stop" weed lecture by CDFA State Biologist Butch Kreps at the local historic train station, informative noxious weed displays at each agency office, and a children's weed pulling day supervised by numerous WMA team leaders. A subcommittee of six agencies within the SWAT team have been busy controlling Dalmatian toadflax and yellow starthistle both chemically and manually, as well as, distributing educational fliers in associated neighborhoods. The group is very pleased with the completion of draft weed population maps that are being utilized widely.

Amador Weed Management Area
Amador County, Mike Boitano (209) 223-6481, amaag@cdepot.net Has held four organizational meetings resulting in a rough draft MOU, solicitation of participation, work towards yellow starthistle demonstration plots- experimenting with mechanical, chemical, and grazing control methods. The group will also be involved in the yellow starthistle leading edge mapping project headed up by the CDFA and CalTrans.

Southern and Central Sierra Noxious Weed Alliance
Mariposa, Madera, & Fresno Counties, Joanna Clines (209) 297-0706 x 4938
The group will soon sign a memorandum of understanding formalizing the cooperation and common goals of 20 agencies and groups in Fresno, Madera, and Mariposa counties. One of the Alliance's primary goals is the formation of local cooperative WMA's- the first two have now been formed (see article on page 15). In support of the group's inventory goal, Mariposa County RCD is mapping yellow starthistle up to the Sierra National Forest boundary, where the Forest Service is continuing the effort with a crew of 2 weed surveyors. To further their education goal, the Weed Alliance was awarded a NFWF grant to publish an educational brochure and to create a web site. The Calif. Dept. of Food and Agriculture and the Forest also sprayed a demonstration plot to observe the effects of glyphosate and clopyralid on yellow starthistle along Highway 168.

Weed Management Areas (WMAs) are local organizations that bring together landowners and managers (private, city, county, State, and Federal) in a county, multi-county, or other geographical area for the purpose of coordinating and combining action and expertise in combating common invasive weed species. The WMA functions under the authority of a mutually developed memorandum of understanding (MOU) and is subject to statutory and regulatory weed control requirements. A WMA may be voluntarily governed by a chairperson or a steering committee. To date, groups in California have been initiated by either the leadership of the County Agricultural Commissioner's Office or a Federal Agency employee. WMAs are unique because they attempt to address agricultural (regulatory) weeds and "wildland" weeds under one local umbrella of organization. It is hoped that participation will extend from all agencies and private organizations. WMAs have printed weed I.D./control brochures, organized weed education events, written and obtained grants, coordinated demonstration plots, instituted joint eradication and mapping projects, as well as, many other creative and effective outreach and weed management projects.

For further information about WMAs in general see the California WMA website at http://www.cdfa.ca.gov/wma or contact Steve Schoenig at the California Department of Food and Agriculture, sschoenig@cdfa.ca.gov For information specific to a particular WMA, refer to contact information above.

Profile Weed Control

BY: JOEL TRUMBO

The California Department of Fish and Game (DFG) manages almost 850,000 acres of wildlife habitat from the coastline of Del Norte County to the arid shores of the Salton Sea. While some of these areas are used for specific purposes, such as deer herd management or wetlands protection, most of these lands have been set aside for the general purpose of protecting and enhancing wildlife habitat. These protected areas, some of them thousands of acres in size, are used by a wide array of plant and animal species. Unfortunately, the value of these areas as fish and wildlife habitat is under attack by invading, non-native plants.

A survey of DFG wildlife area and ecological reserve managers in 1999 indicated that DFG lands were threatened by almost 40 species of invasive weeds. Included in this list of noxious invaders are well-known threats such as yellow starthistle, perennial pepperweed, and salt cedar. The list, however, also includes a few less common villains such as the aquatic weed parrotfeather and the escaped ornamental periwinkle. More than 40% of these reported infestations were larger than 10 acres, with almost 20% larger than 100 acres.

The impact these noxious weeds have on the management of wildland areas is significant. Besides out-competing native plants and degrading wildlife habitat, invasives cause other impacts as well. Aquatic weeds, such as parrotfeather and Eurasian watermilfoil, block canals that are used to flood fields for waterfowl. The long spines of yellow starthistle prevent trail access and can injure hunting dogs. In some cases, noxious weeds pose a direct economic impact. The invasion of perennial pepperweed at one DFG wildlife area threatens to reduce the value of a native hay crop that is sold to help defray operating expenses.

A Coordinated Effort

The large number of diverse properties that DFG manages throughout the state require a well-coordinated effort. With over 600 individual areas to manage, the task of controlling invasive weeds could easily become an exercise in frustration. At one end of the extreme, each facility could be left to solve its own weed problems without the benefit of knowing what has worked well elsewhere. On the other hand, following a highly standardized "one-size-fits-all" strategy fails to take into account important site-specific factors that can mean the difference between success and failure. In order to prevent these types of situations from occurring, invasive weed control projects on DFG lands have been administered through the DFG Pesticide Investigations Unit (PIU) since 1980. The PIU has a staff of pest control advisors who provide DFG land managers with herbicide use recommendations to help battle invasive weeds. Herbicide recommendations, however, are only part of this coordinated approach. Other factors such as education, communication, and a careful system of post-treatment evaluations are critical as well.

The solution to any invasive weed management problem must first begin with an accurate identification of the weed pest and its potential impacts. In most cases, this first step is taken by the DFG land manager. Managing wildland areas is a complex undertaking that involves a myriad of environmental and administrative considerations. Not only do land managers need to consider the threat that the weedy invader may pose, they must also consider the costs of potential control measures and the overall importance of controlling weeds compared to other pressing management activities. Prioritization, then, is of prime importance. For example, how important is controlling an established, yet slow moving, invasion of salt cedar versus road repairs or the construction of a new check station that will be used during the upcoming waterfowl season?

Once a DFG land manager identifies the invasive weed problem, they contact the PIU to discuss control options. Often, the PIU's pest control advisors will visit the site to inspect the infestation. In the end, a control strategy will be developed that includes an herbicide use recommendation.

Well-Trained Applicators are a Must

Whenever possible, DFG tries to control invasive weeds before infestations get too large. Because of this, most herbicide applications can be made with backpack sprayers or other small-scale application equipment or techniques. But even under these circumstances, having well-trained pesticide applicators is a necessity. Departmental policy requires all DFG pesticide applications to be made, or supervised, by employees who have been certified as pesticide applicators by the California Department of Pesticide Regulation (DPR). DFG has more than 80

in the Fish and Game

DPR-certified applicators and each one receives annual training at the DFG Pesticide Applicators Seminar. This seminar provides the required annual pesticide safety training and also offers a forum for DFG employees to hear and discuss the latest information on invasive weed control methods used by other DFG facilities, other state and federal agencies, and private organizations.

Post-treatment Evaluations

Constant vigilance is a critical part of any pest management operation. Part of this vigilance for DFG land managers includes careful post-treatment monitoring of invasive weed control methods. These evaluations are completed for many DFG invasive weed control projects. Once completed, the evaluations are returned to the PIU where they will be used to make decisions about future weed control activities at that site and for similar projects at other DFG facilities.

An Integrated Approach

While the judicious use of herbicides is central to most DFG invasive weed control projects, it is not the only method used. The challenges of controlling invasive weeds in wildland areas requires an integrated program that includes other methods such as mowing, burning, grazing, or the use of biological control agents.

The DFG started work on a manual of invasive weed management plans in 1998 to address the need for an integrated vegetation management approach. The manual will provide general information on the biology, impacts, and control methods that can be used against the most serious invasive weed threats found on DFG lands. When completed, the manual will include plans for problem species like perennial pepperweed, yellow starthistle, parrotfeather, and salt cedar. The manual is being written by the PIU with assistance from a technical advisory committee comprised of wildland management personnel from each of DFG's six inland regions.

Ongoing Invasive Weed Management Projects

Several weed management projects are ongoing at DFG facilities throughout the state. A few examples of these projects are highlighted below.

Lake Earl Wildlife Area

Lake Earl Wildlife Area is in the extreme northwest corner of California about five miles north of Crescent City. The area encompasses 5,000 acres and contains two connected lakes, coastal dunes, and coniferous forests. While Lake Earl provides important habitat for numerous birds and animal species, perhaps its most important value is as a stopover location for the migration of the Aleutian Canada goose, a federal endangered species. The geese feed and rest in fields that has been invaded by tansy ragwort (*Senecio jacobaea*). Tansy ragwort is a poisonous member of the sunflower family and is a frequent pest of pastures and fields in the Pacific Northwest. DFG personnel at Lake Earl maintain the wildlife area fields for geese use by planting grass/clover mixes and by using selective grazing. Livestock grazing in these fields is stopped prior to the arrival of the geese in the fall. Applications of the herbicide Garlon 3A to control tansy ragwort infestations in these fields are also completed prior to the arrival of the geese. This integrated approach using herbicides and grazing appears to offer a good solution for tansy ragwort control at the wildlife area.

Gray Lodge Wildlife Area

Control of the highly invasive, aquatic weed parrotfeather (*Myriophyllum brasiliense*) at this Sacramento Valley wildlife area has been ongoing for several years. Spectacular populations of waterfowl attract large numbers of bird watchers and hunters to this wildlife area in the fall and winter. The migrating waterfowl are dependent on managed wetland areas maintained by a system of supply ditches that are threatened by dense populations of parrotfeather. Weed control efforts in the canals have focused on water flow manipulation in conjunction with aquatic herbicide use. However, control of the invasive aquatic weed remains a tremendous challenge due to its aggressive spread and lack of herbicide products that can be used successfully in flowing waters. Several different herbicide products have been used including Weedar 64 and Rodeo. At the present time, wildlife area staff are participating in an federal experimental use permit program using Renovate, an aquatic version of the terrestrial herbicide Garlon 3A. Wildlife Area staff have found that if used early enough in the season, Renovate can provide control of parrotfeather. Unfortunately, parrotfeather's potential for aggressive recolonization makes long term control an ongoing challenge.

Gray Lodge is also the site of a DFG study on giant cane (*Arundo donax*) control methods. This study, conducted by the PIU and funded by the U.S. Environmental Protection Agency (USEPA), is investigating the effectiveness of various

continued on page 12

Control of parrotfeather is an ongoing challenge at Gray Lodge Wildlife Area

Profile *continued from page 11*

combinations of cutting and herbicide use techniques. Along with the efficacy study, the project is also investigating the toxicological impacts of herbicide use to nontarget fish and frogs that are frequently present in giant cane control project areas. This project provides DFG with an important opportunity to obtain critical information about giant cane control and to work cooperatively with other public and private land managers including the USEPA, local county agricultural commissioners, the University of California and environmental groups.

Arundo control- a combination of mechanical and chemical methods.

Ash Creek Wildlife Area

More than 14,000 acres in size, Ash Creek Wildlife Area straddles Lassen and Modoc Counties in the high desert of northeastern California. Like most DFG wildland areas, Ash Creek has several invasive weed species that require control efforts. Scotch thistle (*Onopordum acanthium*), a CDFA "A" rated noxious weed, has been the focus of a cooperative control program by DFG, CDFA and the local county agricultural commissioners office for more than ten years. Scattered populations of this large thistle exist in upland and riparian areas of Ash Creek. One of the primary challenges to Scotch thistle control at the wildlife area involves the greater sandhill crane, a threatened species. Spraying activities that occur during the late spring and early summer need to be conducted in a manner that will not disturb crane nesting or brood rearing activities.

The scotch thistle control program at the wildlife area and in the surrounding agricultural areas in the region have been ongoing for more than a decade using several different herbicide products including 2,4-D formulations and dicamba. During that time, scotch thistle has proven to be a formidable pest. The coordinated efforts of DFG and the other public agencies involved are certain to continue into the future.

Bolsa Chica Ecological Reserve

Bolsa Chica Ecological Reserve in Orange County was originally created to provide nesting habitat for the California least tern, a small shorebird that makes its home along the California coast in the spring and summer. However, since the time of its creation Bolsa Chica has proven to benefit not only the endangered tern, but many other plant and animal species. Unfortunately, introduced annual grasses and forbs destroy the bareground nesting habitat required by terns and other shorebirds and threaten to outcompete plantings of native plants. A regular weed control program using hand removal and targeted Roundup use has proven to be successful in protecting these sensitive sites.

Camp Cady Wildlife Area

The Mojave River, like most other desert riparian sites in the American southwest, has been significantly impacted by salt cedar (*Tamarix ramosissima*). This introduced tree species alters water flows, displaces native plant species, and impacts wildlife habitats. Since the mid- 1980s, volunteer groups at Camp Cady have worked on salt cedar removal at the wildlife area. However, almost one-third of the riparian area of the area is still dominated by the introduced tree. To address this serious ecological issue, a project has been proposed by DFG and the BLM to fund a cooperative effort at Camp Cady and two other BLM properties. This project, if approved, will provide funding for salt cedar removal and native plant revegetation with cottonwoods and willows. Among the herbicide products that may be used for this project on DFG lands are two formulations of triclopyr (Garlon 4 or Pathfinder) and Stalker, a newly registered herbicide product in California that contains the active ingredient imazapyr.

The Challenge of the Future

The impact of non-native, invasive weed species adds one more layer of complexity to the already daunting task of managing DFG's wildlife areas and ecological reserves. Pests like yellow starthistle, salt cedar, and giant cane, if left unchecked, will cause further destruction of California's already dwindling fish and wildlife habitat. The DFG effort against these weedy invaders requires a coordinated approach that relies on good communication amongst DFG land managers statewide, guidance from the PIU pest control advisers, and a training program that focuses on human and environmental safety and the latest innovations in weed control methods.

Because of the serious threat posed to California's natural resources, invasive weed management by DFG and others must focus on cooperative efforts. Most invasive weed problems are regional in scope and effect both public and private land managers. However, beyond the merely geographic lies the underlying issue of resources. Without resources to educate the public and to fund control efforts, invasive weeds will continue to destroy habitat and diminish the value of public and private lands. In the future, DFG looks forward to working more closely with other agencies and private industry on invasive weed projects to increase knowledge and resources. Participation on the California Interagency Noxious Weed Coordinating Committee and in local weed management areas will be an important element in years to come. With cooperation and the proper resources, DFG and other land managers can slow the spread of invasive weeds and protect California's fish and wildlife resources. ❖

Joel Trumbois is the Pesticide Use Coordinator for thePesticide Investigations Unit, California Department of Fish & Game.

Adopt-A-Highway and Weed Control- Caltrans and Weed Management Area Partnerships

The *Central Sierra Partnership Against Weeds* Weed Management Group has partnered with the California Department of Transportation (CalTrans) in a unique weed control focused Adopt-A-Highway effort. Traditionally, the Adopt-A-Highway Program is thought of in terms of litter removal, graffiti abatement, and roadside plantings. Volunteer adopters are reported to collect over 54,000 cubic yards of litter from 3,600 locations on State highways each year. More than 40,000 individuals and groups have participated in the Caltrans Adopt-A-Highway program since its inception in 1989.

The *Central Sierra Partnership Against Weeds* Group has adopted a five acre right-of-way along Highway 108 in Tuolumne County. Rather than trash removal, the site has been dedicated as a multi-use demonstration site for weed control/ removal. The *Central Sierra Partnership Against Weeds* first efforts have been targeted towards chemical control of yellow starthistle and oblong spurge, the most widespread invaders. Eventually the group foresees controlling Italian thistle, Klamath weed, cockle bur, tar weed, Scotch Broom, tree of heaven, and puncture vine, which all co-infest the site. The Natural Resource Conservation Service (NRCS) is experimenting with mowing as a means of controlling yellow starthistle. Mean while, both the Native Plant Society and the Tuolumne Mewuk Tribal Council are experimenting with combinations of oak/pine leaf litter as a mulch to deter invasive reestablishment and revegetating (as well as providing competition) at the site with deer grass and other natives. The site has promoted both public awareness about the economic and environmental threats of invasive weed species and has generated a positive local response in terms of land stewardship.

Cal Trans provides Adopt-A-Highway volunteers with appropriate permits, hats, gloves, and safety training, at no cost. Adopters are recognized for their contribution by the placement of a roadside sign.

Weed Management Areas interested in adopting a section along one of California's Highways should contact *Kent Kibble, Adopt-A-Highway Coordinator at (209) 948-7462* to discuss potential sites, site goals, environmental concerns, and the development of a detailed site plan. To learn more about the Tuolumne Site, contact *Tuolumne County Deputy Agricultural Commissioner/ Lead member of the Central Sierra Partnership Against Weeds, Marian Chambers, (209) 533-5691.*

Weed Contest Increases Awareness

BY: JOANNA CLINES

As a fun way to increase employee awareness about noxious weeds, while contributing to the Forest's weed inventory, the Sierra National Forest held a weed contest during the summer of 1998. The "Obnoxious Weed Contest" ran from July 30 through September 30. Sixteen noxious weed species were identified as targets, color weed ID cards were ordered from the Wyoming Weed and Pest Council, and packets of ID cards with postcards were distributed for participants to use in documenting weed locations. Mini- weed identification workshops using live plants, slides, and herbarium specimens were held. The distinction between native and noxious thistles was especially emphasized. The largest incentive was CASH PRIZES!

Points earned varied depending on how information was transmitted: merely reporting a new weed location or showing weed coordinators an infested site on a map earned 1 point, filling out a weed location card and mailing it in earned 2 points, while mapping weed populations on a quad brought the contestant 3 points. Additionally, if a forest employee found a small patch of yellow starthistle (the Sierra National Forest's worst weed) and eradicated it, 5 points were awarded. Documentation of a "first time sighting" of a highly invasive weed, like rush, skeletonweed, or dalmation toadflax, earned a 5 point bonus.

Forest Service employees turned in a total of 59 weed locations and a Madera County sheriff's deputy that attended a workshop reported 12 additional yellow starthistle sites. The contest was invaluable in raising employee awareness and coordinators continued to receive information about weed locations long after the contest was over.

For more tips on how your agency or weed management group can organize a similar weed contest, contact Joanna Clines at (916) 492-7572. Clines is a Forest Botanist with the Sierra National Forest.

Minutes of the California Interagency Noxious Weed Coordinating Committee Meeting Sacramento, CA *April 20, 1999*

Agency Reports

California Agricultural Commissioner's Association (CACASA): (1) *Weed Free Forage Program*- In process of developing protocol and contacting packing organizations; Program package presented at May CACASA conference; Draft copies available from Karl Bishop (530) 283-6365, upon request. (2) *Invasive Horticultural Species*- A list of invasive horticultural plant species is out and has been distributed to Ag Commissioner's for discussion; It will be critical to get this list out and widely distributed; Further progress stalled on industry end; further discussion expected at May CACASA conference; List available from Mark Quisenberry at (530) 822-7500 (Sutter Co. CAC), upon request.

CA Department of Food and Agriculture (CDFA): (1) *Western Weed Coordinating Committee (WWCC)*- Held a productive, well attended meeting in March; Major action items included: a) Comprehensive, Agency (land-managing)-Wide effort to assess Western Noxious Weed Programs; Information gathered will serve as a comprehensive overview document for lobbying purposes; CDFA is serving as coordinator-questionnaires will be distributed. b) Establishment of a Center for Noxious Weeds for the Western States; Center will aid in education on a regional basis and serve as a coordinator/facilitator for Western States; Center would work closely with Western Governor's Association; Additional funds still needed- agencies will be contacted by WWCC; 1 year goal set for getting Center up and running. c) Web Page for WWCC.

CA Exotic Pest Plant Council (CalEPPC): Fall 1999 symposium/conference slated for October 15th - 17th in Sacramento at NEW Double Tree (formerly Sacramento Inn/Red Lion Inn); Program still being developed- proposed program additions include: submitted, research-oriented student papers and concurrent Saturday sessions (See Announcement on page 16).

CalFed Nonnative Invasives Task Force: Monies being dispersed via: a) General/Open proposal solicitation, Introduced Species is one topic area and b) $1 Million in Directed Action Budget; A CALFED Non-Native Invasive Species Task Force has selected several projects, including: $250,000 towards Spartina spp. containment and eradication in the Bay-Delta and $200,000 towards purple loosestrife eradication, detection, and control in Bay-Delta.

Range Management Advisory Committee (RMAC): *Strategic Plan*: CDFA is acting as technical consultant to Range management Coordinating Committee; Plan has been released as a revised draft which won't be finalized until the Board of Forestry develops a quorum that can approve the plan; Elements of the plan are appearing in legislation by Oller, Frusetta, & Maldonado- will likely provide $1.5 million per year- funding for Weed Management Areas.

USDA-Agricultural Research Service: *Tamarisk Biocontrol Update*- In final NEPA stages; many supportive comments received in open review period; However, due to a continued concern about potential habit loss for the willow flycatcher lodged by Nancy Kaufman, Director of the Arizona District, Fish and Wildlife, a 45 day extended comment period was granted; Any biocontrol efforts are stalled pending further review; Letters of support to USDA-APHIS were encouraged from CINWCC signatory agencies and stakeholders.

USDA-Animal and Plant Health Inspection Service (APHIS): A national survey on *Salvinia molesta* is being pursued; *S. molesta* has been found in both Texas and Hawaii (of Western States); Potential for a CA specific survey is being considered; Identification of *S. molesta* has been sent to Ag Commissioners.

US Forest Service: (1) *Sierra Nevada Framework*- Tying into National Strategy-adding specifics in regards to prevention, education, mapping, and control strategies; September 1999 is date targeted for EIS (draft and framework) release. (2) *WMAs*- Brochure produced by the Sonora Weed Management Area was circulated; WMA forming in 6-rivers area (3) Invasive weed acreage treated in Region V has doubled since last year (from 500 to 1,000 acres), while inventories have continued. (4) Modoc Forest is working on Environ. Assess. for herbicide treatments of invasive species on forest lands.

Bureau of Indian Affairs (BIA): No monies were directed towards invasive species at a March BIA meeting. A special meeting to review the process involved in allocation of funds is scheduled for June.

National Fish and Wildlife Foundation (NFWF): *Pulling Together Initiative*- 10/25 funded projects are in CA- ranging from $65,000-$2,500/ Project ($350,000 Total); An increase in applicants from CA, especially BLM and Forest Service was noted; Additional funds have since been received from the Forest Service, additional funded projects are pending review (see article on page 1); June 2nd is deadline for Native Plant Initiative- weed treatments appropriate when natives threatened; November 2nd is deadline for the next Pulling Together Initiative proposal solicitation-applications are available at: www.nfwf.org

Department of Defense (DoD): *California Military Action Coordinating Committee*- A partnership between CalEPA and military to look at common problems as a result of base closures-will suggest invasive species be added to the group agenda; DoD also has a *Defense Pest Management Board* that is working towards a mandate/goal in decreased pesticides usage within the military.

Hunter-Liggett Plan: Plan currently being developed- looking at $3-5 million over 3-5 year timeframe to develop program that integrates best control strategies for YST; Goals include: a) Integrated Pest Management Program and b) Manage invasive species in a sustainable manner (yellow starthistle primarily) so that portions of military base can again be used for training.

California Department of Forestry: *Vegetation Management Plan*- Primarily contracts involving prescribed burning for private land owners- 40,000 acres have been burned since 1981 Based on a feasibility study on alternative IPM strategies; CDF is currently expanding program to include additional control methods, beyond prescribed burning; A new Director and Chief Deputy have recently been assigned and several seats on Board of Forestry are presently vacant-these seats, once filled and the new administration will determine future direction and policy for the CDF.

CalTrans: "Californians Against Toxics (CAT)" recently put out a negative media campaign aimed at CalTrans- It was suggested by CINWCC representatives that letters/comments of positive results and/or partnerships with CalTrans be directed to CalTrans Management; Other Agencies have also been contacted (soliciting Pesticide use data/ information) by "CAT"; Similarly, a document entitled: "Californians for Pesticide Reform," was recently delivered to the director of the EPA, for a copy please contact Scott Johnson at (209) 982-4337.

General Business

Federal Executive Order 11312: Released Feb. 3rd, 1999-See article on page 1 in Spring1999 issue (Volume 1, No. 4) of Noxious Times.

California State Assembly Bills: Bills 737 (Oller, House, Frusetta, Maldonado) and 1168 (Frusetta) are becoming merged; a joint authorship (republican-democratic) is developing; see UPDATE on page 1 for latest developments.

Weed Management Areas (WMA) Update: To date, most areas throughout the State have developed or are in the process of organizing WMAs (see UPDATE on pages 8-9).

Coordinated Yellow Starthistle Mapping in the Western Sierra Watershed: (See article on pg 3).

War on Weeds Mini-Grants: Administration of Grant turned over from BLM to CDFA, Integrated Pest Control Branch; 1-2 page proposal/project plans due July 16th will be reviewed by CINWCC at the July 22nd meeting; The goal for this year is to fund 3 projects ($3,000 each).

Research Needs Committee/List: It had been suggested at an earlier CINWCC meeting that the group prioritize research needs for CA- the group was surveyed as to continued interested in this opportunity; The group suggested a 2 stage process: 1) Build an initial priority list by general Brainstorming via letter sent out to CINWCC signatory agencies and stakeholders and 2) Hold special meeting of CINWCC members and other interested parties to further prioritize and develop the list; The list would then be used for future legislation directives (Federal, State, and local) and could also be used by UC research scientists and other Invasive Species groups in research, education, and management planning/direction. ❖

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NFWF Awards *continued from page 1*

Stone Lakes Basin Water Hyacinth Control *U.S. Fish and Wildlife Service* $85,000
Apply various spraying methods to control approximately ten acres of water hyacinth coverage in north central California. Education effort will target local bait shops, marinas, boat stores, and aquatic plant retailers, who will distribute brochures.

Tahoe National Forest Weed Control *USDA-Forest Service, Tahoe National Forest* $10,800
Restore the natural functioning of native plant and animal communities in the Boca Wildlife Management Area in Nevada by manually removing musk thistle from 300 acres of high priority land.

Fort Ord's "War on Weeds"-II *Creative Environmental Conservation* $110,000
Continue work with BLM and volunteers from area schools and communities on the central coast of California to eradicate weeds and restore native species on at least 10% of the 29,000-acre weed management area.

Humboldt Bay Dunes Restoration-III *Bureau of Land Management* $108,000
Enhance and restore 20 acres of highly degraded foredune habitat for two endangered plant species by eradicating eight additional acres of noxious weeds and 12 acres of resprouts.

Owens Basin Weed Control & Outreach *Bureau of Land Management* $334,400
Implement noxious weed control methods using Integrated Pest Management on three target species in four watersheds within Eastern Sierra WMA; increase scope of current GIS mapping; and implement education programs reaching three counties and 250,000 people.

Salmon River Knapweed Control *USDA-Forest Service, Klamath National Forest* $21,450
Control a 3.5-acre infestation of spotted knapweed and prevent future infestations on the Salmon River watershed through mechanical and chemical means. Project also includes monitoring and public outreach components.

Sierra National Forest Weed Control *USDA-Forest Service, Sierra National Forest* $15,000
Protect a relatively weed-free but highly vulnerable area of Sierra Nevada from Noxious weed invasion by producing an educational brochure that identifies the weed species of concern and the current integrated weed management activities in the area. ❖

CINWCC Agenda for Next Meeting- July 22nd, 1999

- Introductions
- Agency Reports
- Research Survey Results
- War on Weeds Mini-grant Review and Scoring
- AB1168 Weed Legislation
- Yellow Starthistle Mapping Project
- CalEPPC Symposium
- New Results Areas for Strategic Plan
- Statewide Weed Education and Awareness Committee

Resources and Publications:

California Agriculture. March-April 1999. Vol. 53, No. 2. Special Section: Exotic pest update. Three articles are featured on yellow starthistle management: biological control (peacock fly and false peacock fly-a promising new agent), herbicide (Transline timing, rates, advantages and warnings), and mowing (timing and plant branching form).

Pampas Grass: Managing an Invasive Alien Species. This 24 minute instructional video introduces viewers to the problem of invasive plants and then focuses on how to control Pampas grass with manual methods. Modules on chemical control and heavy equipment use are also presented. Cost for delivery is $20. To order contact: Leif Joslyn at Xenobiota Xposures, 62 Stratford Rd. Kensington, CA 94707, (415) 897-9577, leifjoslyn@earthlink.net

Biology and Management of Rangeland Weeds. A recent publication from Oregon State Univ. Press, edited by Roger Sheley and Janet Petroff. The publication provides practical, science-based information needed for sustainable weed management and land restoration. Includes information on the biology, distribution, and management of 29 of the most serious weeds of the West. Cost: $32.95 plus $3 shipping. To order by credit card, 1-800-426-3797

Upcoming Events:

July 21-22, 1999. California Forest Pest Council Weed Committee Tour. Sonora Area. This two-day field will include visits to forestry vegetation management sites, herbicide trials, and different types of plantations on private and Forestry Service lands, as well as, along utility rights of way. Weed species discussed will include dyer's woad and yellow starthistle. Activities begin at 7:30 A.M. both days and the tour will end midday on the 22nd with a barbecue. Registration $70 (includes bus transportation, lunch both days, and an end-of-tour barbecue). 10-15 hours (exact hours pending) of continuing education credit will be available. *Contact Pamela Rener, (530) 889-3811* for further information.

October 6-7, 1999. Aquatic Weed School. Heidrick Ag History Center, Woodland, CA. Learn about biology, ecology, and management of aquatic weeds and algae. All methods of practical management including mechanical, biological, cultural, and chemical will be discussed. This intensive two-day course will focus on issues associated with developing weed management strategies in a variety of aquatic ecosystems. Day one will cover physical and chemical characteristics related to flowering and non-flowering and identification, biology, and ecology. Day two will examine mode of action of herbicides and specific strategies for control. The school is designed for those involved in consulting, research, and management of aquatic weed systems. The course fee is $300 (includes all course materials and lunch both days). *Contact Brenda Brinton, (530) 752-0612 or Nancy Muller, (530) 752-7091*, muller@vegmail.ucdavis.edu for more information.

October 15-17, 1999. California Exotic Pest Plant Council Annual Symposium, Taking it to the Field: From Prevention to Management. Symposium will include a general session with discussions of biodiversity, changes and news in federal and state invasive weed policies, and funding opportunities. Other sessions will include talks on the biology and management of aquatic weeds and invasive annual grasses. The Saturday program will focus on fieldwork related to prevention, eradication, and management of invasive weeds. There will be 2 working group sessions and an update session with brief discussions of recent newsworthy items. Four field trips are being planned for Sunday including 2 full-day trips: Cache Creek to view salt cedar and Sacramento Delta to focus on aquatics. Half day trips to Consumnes River for perennial pepperweed and the Sierra Nevada foothills for Spanish broom and Pampas grass. The conference will be held in Sacramento. Symposium fee is $80. For more information please *contact Sally Davis, (949) 487-5427*, sallydavis@aol.com

California Interagency Noxious Weed Coordinating Committee
Noxious Times
1220 N Street, Room A-357
Sacramento, CA 95814

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